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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/755,242	01/13/2004	Carmine V. DeLuca JR.	4881	9645

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EXAMINER	
MANLOVE, SHALIE A	
ART UNIT	PAPER NUMBER
1755	

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/755,242	DELUCA, CARMINE	
	Examiner	Art Unit	
	Shalie A. Manlove	1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/29/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the term substantially substrate free is defined as containing 60% or less substrate. This range would not be considered as substrate free. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Applicant defines the term "substantially substrate free" as containing 60 % or less substrate, this range would not be considered as substrate free. The term "substantially " may be acceptable as long as it does not negate the meaning of the word it modifies as in this case. In re Mattison USPQ 484 (CCPA 1975).

In the interest of compact prosecution, the examiner notes Applicant's definition.

5. In claims 4 and 7 respectively, the phrases "titanium dioxide in the area other than the surface is in the rutile crystalline form" and "titanium dioxide in the area other than the surface is in the anatase crystalline form" are vague and confusing. The titanium dioxide is not reported in any other area other than the surface. Please clarify.

6. Claim 16 recites the limitation "the mica" in line 1. There is insufficient antecedent basis for this limitation in the claim. In the interest of compact prosecution, it has been assumed by the examiner that the term "mica" refers to the substrate upon which the titanium dioxide is formed.

7. Claim 20 is indefinite. What is meant by a paint comprising paint?

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims1, 4-10, 12-15, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeLuca et al US 5,611,851 and Schmid et al US 5,693,135.

Regarding claims 1 and 10, DeLuca teaches a process for preparing unsupported metal oxide nacreous pigments derived from metal oxide coated mica pigments wherein mica is dissolved away from rutile or anatase titanium dioxide (col. 2, line 47-col. 4, line 41) by dispersing the pigments in a phosphoric-sulfuric acid solution (col. 2, lines 57-60).

DeLuca does not teach the pigment having a surface comprising reduced titanium oxide. Schmid teaches a reduced titanium oxide coated mica and method of making wherein titanium dioxide is reduced in the presence hydrogen or ammonia or mixtures of the two, which can produce mass tone colors of blue to violet (col. 3, lines 1-35; Examples 1 and 2).

DeLuca and Schmid both teach the basic pigment comprising a metal-oxide with mica substrate. It would have been obvious to one of ordinary skill in the art to combine the two inventions, DeLuca's invention of the unsupported metal oxide for the purpose of increasing the reflectivity and Schmid's invention of reducing the metal oxide for the purpose of increasing the mass tone color, in order to produce an optimum optical effect pigment having increase reflectivity and deep mass tone color.

As to claim 4, and 7 DeLuca teaches in column 4, lines 28-30, titanium dioxide to be in the rutile and anatase crystalline form respectively.

As to claims 5, 6, 14, and 15, DeLuca teaches the unsupported pigment can contain 20 % or less by weight mica (col. 3, lines 36-42). In column 3 lines 46-48, the reference teaches that all of the mica can be dissolved away leaving a pigment composed entirely of metal oxide.

As to claims 8 and 9, neither DeLuca nor Schmid teach the pigment's condition would be opaque or not opaque. However, one of ordinary skill would expect that the pigment would display either if not both conditions depending upon the degree of reduction to the metal oxide and the percent of dissolution of the substrate.

As to claims 12 and 13, Schmid teaches heating the titanium dioxide pigment in reducing gases such as hydrogen, or ammonium and mixtures thereof (col. 3, lines 1-3).

As to claims 17-19, DeLuca and Schmid respectively teach industrial applications, in the cosmetic, plastics, coatings, automobile finishes and ink industries ('851 col. 4, lines 35-39) and ('135 col. 4, lines 51-59).

10. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Armanini US 4,192,691 and Schmid et al US 5,693,135

As to claims 1 and 10, Armanini teaches an unsupported metal oxide platey pigments derived from metal oxide coated mica pigments wherein mica is dissolved away from rutile or anatase titanium dioxide (col. 3, lines 1-51) by dispersing the pigments in a hydrofluoric-sulfuric acid solution (col. 3, lines 9-15).

Armanini does not teach the pigment having a surface comprising reduced titanium oxide. Schmid teaches a reduced titanium oxide coated mica and method of making wherein titanium dioxide is reduced in the presence hydrogen or ammonia or mixtures of the two, which can produce mass tone colors of blue to violet (col. 3, lines 1-35; Examples 1 and 2). Armanini and Schmid both teach the basic pigment comprising a metal-oxide with mica substrate.

It would have been obvious to one of ordinary skill in the art to combine the two inventions, Armanini's invention of unsupported metal oxide for the purpose of increasing the reflectivity and Schmid's invention of reducing the metal oxide for the purpose of increasing the mass tone color, in order to produce an optimum optical effect pigment having increase reflectivity and deep mass tone color.

As to claims 2, 3 and 11, Armanini teaches in Example 4 that the metal oxide would have a length of 1-75 microns and a thickness of about 5-600 nm (col. 9, line 65-68).

As to claims 4 and 7, Armanini teaches titanium dioxide in both rutile and anatase crystalline forms (col. 3, lines 42-48; Tables 3-4 and 6)

As to 5, 6, 14, and 15, Armanini teaches the unsupported pigment can contain up to 20 % by weight mica (col. 10, lines 1-4). In column 4 lines 14-18, the reference teaches that all of the mica can be dissolved away leaving a pigment composed entirely of metal oxide.

As to claims 8 and 9, neither Armanini nor Schmid teach the pigment's condition would be opaque or not opaque.

However, one of ordinary skill would expect that the pigment would display either if not both conditions depending upon the degree of reduction to the metal oxide and the percent of dissolution of the substrate.

As to claims 12 and 13, Schmid teaches reducing titanium dioxide in the presence of hydrogen, ammonium or mixtures thereof in column 3, lines 1-5.

As to the limitation of extractive dissolution acids, set forth in applicant claim 16, Armanini does not teach the use of phosphoric acid.

It seems that the applicant is utilizing a mixture of phosphoric acid and mineral acids to dissolve the mica of claim 16.

Although Armanini does not teach the use of phosphoric acid, it would have been obvious to one of ordinary skill in the art at the time of invention to select the acids for extractive dissolution based upon consideration of the material being dissolved, the dissolution rate and the degree to which dissolution (etch rate) is desired.

As to claims 17-19, Armanini and Schmid respectively teach industrial applications, in the cosmetic, plastics, coatings, automobile finishes and ink industries ('691 col. 5, lines 41-46) and ('135 col. 4, lines 51-59).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shalie A. Manlove whose telephone number is (571) 272-1372. The examiner can normally be reached on M-TH 6:30-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shalie A. Manlove
Examiner
Art Unit 1755

March 12, 2005